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INVITED COMMENTARY

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Stent-graft repair of thoracic aortic pathology has proceeded at a frustrating pace on the North American side of the Atlantic. The engineering, regulatory, and commercial interest issues responsible for this slow (compared with abdominal aortic aneurysm) development have been the subject of considerable discussion among the involved parties. At the present time, except for a very few centers holding physician-sponsored Investigational Device Exemptions, this technology is only available in the United States in the form of 3 Phase II clinical trials, which are currently restricted to treatment of degenerative thoracic aneurysms (DTA) in candidates for open surgery. Furthermore, given the "morbidity quotient" of conventional surgery for thoracic aortic (TA) pathology, the clinical need for stent-graft repair in this area is both obvious and pressing. The good news is that the latter is now recognized by all parties involved and, with the imminent publication of the first US pivitol trial,[1] there likely will be a commercially available graft in the United States within a year.

The present Eurostar/United Kingdom registry report is certainly the largest compendium of patients treated with thoracic aortic stent grafts. Readers of the *Journal of Vascular Surgery* are accustomed to valuable clinical reports from the Eurostar registry, and the present study will certainly serve (at least temporarily) as a benchmark for periprocedural results achievable with TA stent grafts. Procedural mortality was in line with the available literature, particularly since many patients treated with TA stent grafts are in genuinely desperate clinical circumstances. Emergency treatment was required in half the dissection patients and in 25% of those with DTA. The authors' results with respect to central nervous system complications are admirable. Stroke has been a vexing problem in this arena, and I concur with their sanguine discussion concerning the low—but not zero—risk of spinal cord ischemia.

Limitations of this study are many and a function of the registry format. This report is a cataloguing of procedures performed and, accordingly, cannot address the important issues of patient clinical and anatomic selection criteria. We know little or nothing of the indications for treatment, relative experience and expertise with open surgery at the 62 contributing institutions, nor even the vigor of these data. Fewer than 50% of patients had 1-year follow-up data available. According to the data that were available, a disturbing 15% of DTA patients experienced aneurysm expansion (although not defined) despite low rates of endoleak and a zero graft-migration rate! Although aneurysm-related death was rare, these data are in need of clarification as more follow-up data become available.

As for the different pathologies treated, in the TA the spectrum is wide, from focal lesions (eg, traumatic tear, anastomotic false aneurysm, penetrating ulcer) for which TA stent-graft repair seems ideal, to complex clinical/anatomic circumstances (eg, Type III B dissections) wherein definitive data can be generated only by well-designed clinical trials. The authors record treatment of 50 cases of traumatic aortic tear with excellent overall results. Given the incidence of this injury, this is a large number of cases, and readers of JVS will soon be availed of other reports detailing similar results with stent-graft repair of traumatic aortic tear. Despite the general need of US endovascular surgeons to apply abdominal aortic "cuffs" in an off-label application to repair traumatic tears, it seems evident that the TA stent graft will soon be the treatment of choice for this lesion. Such can hardly be considered the case in the complexities of type B aortic dissection. Although the authors treated some 130 cases, the indications for treatment and the clinical circumstances thereof are vague and debatable, and the desired detail in this regard is likely not retrievable from the registry format. In type B dissection, stent-graft repair at the aortic entry

tear can, in theory, be used to treat both acute (eg, threatened rupture, malperfusion syndrome) and late (eg, chronic aneurysm formation) complications of the disease. In the present report, half the cases were treated electively, yet 2-thirds of these were reported as symptomatic—many with persistent back pain or threatened rupture. The latter is, in fact, uncommon with modest-sized aortae in Type B dissection and the significance of "continued back pain" is ephemeral.[2] In the 22 cases treated for side-branch occlusion, the authors inform us that no adjunctive peripheral endovascular procedures (fenestrations, branch stenting) were required. Experience elsewhere would suggest that such adjunctive procedures are often required to effectively treat malperfusion syndrome.[3] Perhaps all of the authors' patients serendipitously had dynamic side-branch obstruction (wherein re-expansion of the true lumen could be anticipated to effectively treat malperfusion), or some of the adjunctive surgical procedures which the registry is unable to further detail, were directed at peripheral vascular complications of the dissections.[4] I would chide the authors a bit in their notation of a "94% satisfactory CT scan appearance" at 1 year in the dissection cases (n = 63). Since the mean diameter of the dissected aortae was but 46 mm, and the authors did not require total elimination of false lumen flow as a criterion for anatomic success, the figure for favorable computed tomography scan data could be predicted. This is not so much a criticism as it is an assertion of the complexities of stent grafting in aortic dissections. The need for well-designed clinical trials is evident; the European INSTEAD trial, related to its design (patients randomized to stent graft versus medical therapy after the acute phase of the disease) will address only the issue of chronic aneurysm formation.

These are exciting times for vascular and endovascular surgeons whose practices encompass thoracic aortic pathology. This reviewer would strongly encourage vascular surgeons to be expert in the cognitive and judgmental aspects of treating TA pathology, as endovascular skills ideally position us to offer such patients innovative minimally invasive options. The Eurostar/U.K. registry participants are to be congratulated for their efforts at rapidly accumulating and collating experience in a field where substantial experience can be achieved only with multicenter cooperative effort. We anticipated future follow-up studies from these registries with great interest.

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